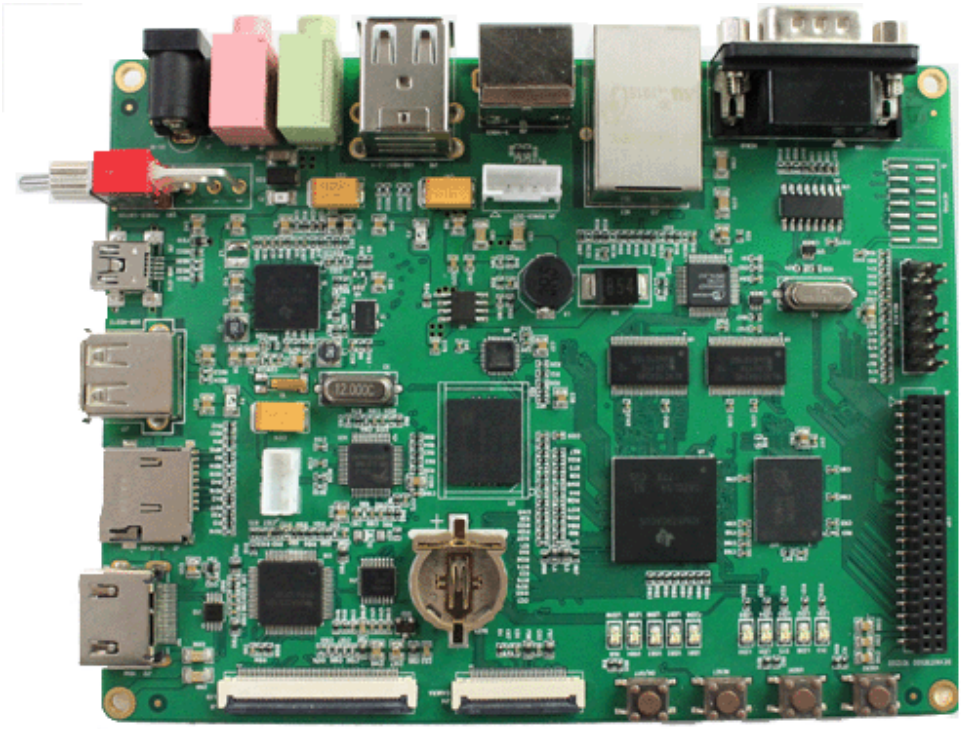
DevKit8500D/A Evaluation Kit

- *TI DM3730/AM3715 Processor based on 1GHz ARM Cortex-A8 core*
- *Onboard 512MByte DDR SDRAM and 512MByte NAND Flash*
- *UART, 4 USB Host, USB OTG, Ethernet, Audio, TF, Keyboard, Jtag,...*
- *Supports 24-bit TFT LCD, DVI-D and S-Video Output Display*
- *Supports VGA, Camera, WiFi, GPS, GPRS, 3G Functions through Modules*
- *Supports for Linux2.6.32, Android 2.2 and WinCE 6.0.15*



Overview

Embest DevKit8500D Evaluation Kit is an ideal hardware and software platform with the incorporation of Texas Instruments' DaVinci DM3730 media processor, as well as supporting running high-level operating systems such as Linux, WinCE and Android. it is a complete development system accelerating time to market for more media-rich, portable applications include navigation systems, media players, medical patient monitoring devices, industrial test and measurement devices, industrial vision and portable communications.

The Evaluation Board

The DevKit8500D Evaluation Board is a high-performance compact board based on TI DM3730 processor (ARM Cortex-A8 Core ~1GHzMHz paired with a TMS320C64x+ DSP ~800MHz), with 512MByte DDR SDRAM and 512MByte NAND Flash as well as a reserved iNAND design to expand the flash storage capabilities. The board exposes many other hardware interfaces including serial port, USB, LCD/TSP, DVI-D, S-Video, Ethernet, TF, keyboard, camera, SPI, I2C and JTAG.

The DevKit8500D Evaluation Board is able to support WinCE OS and Linux. The WinCE OS software package includes WinCE6.0.15 BSP and drivers of which many are in source code; and

the Linux BSP contains the compile tools, the source code of the boot loader and the Linux 2.6.32 and the device drivers. The board has two methods to boot the system and you can boot the board from either TF card or NAND Flash. Besides, it is provided with Android 2.2 demo with driver source code. Embest gives instructions on how to boot Android demo image from NAND flash with TF card.

The Evaluation Kit

The DevKit8500D Evaluation Kit includes the DevKit8500D evaluation board and all necessary accessories to help users start their design of multimedia applications. It is preloaded with Linux OS in NAND flash and WinCE OS in TF card. User can display the system by using a 4.3" or 7”TFT LCD and Touch screen or using a DVI-D monitor with an HDMI to DVI-D cable, or using a TV for NTSC or PAL video display. Embest provides user manual, schematic drawing, datasheet documents and software BSP to help customers better understand and use the kit.

Cross Net cable

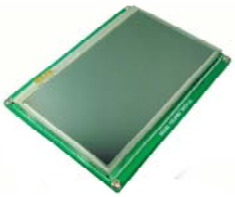
USB cable
A to Mini-A, A to Mini-B

DB 9-DB9
Serial cable

S-video cable

HDMI to DVI-D cable

DevKit8500D board



4.3” or 7”LCD+Touch Screen

DVD

5V@2A Power adapter

2G TF card

DevKit8500D Evaluation Kit (Complete Configuration)

Note: TI’s DM3730 processor is pin-to-pin compatible with TI’s AM3715 processor. The difference between AM3715 and DM3730 is DSP, AM3715 has no DSP, while DM3730 has a DSP. We call DevKit8500D and DevKit8500A for processor using difference on the board.

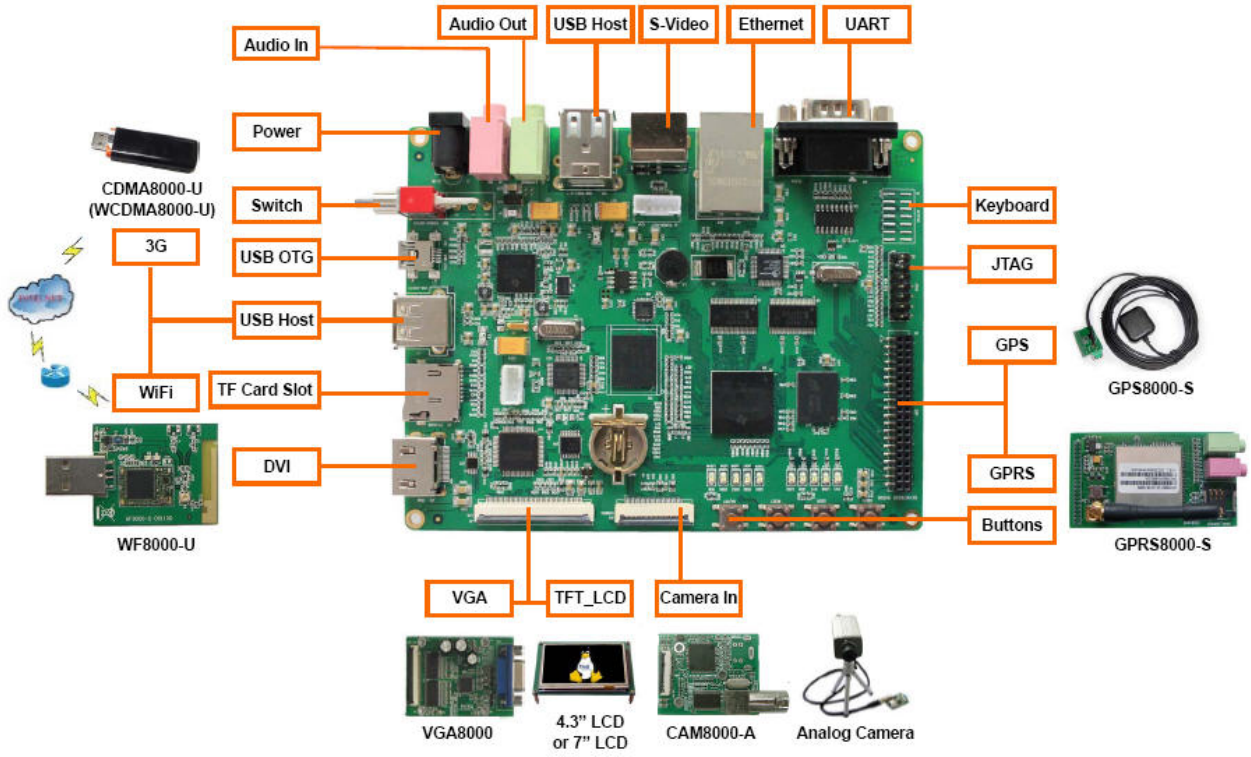
Optional Function Modules

Additionally, Embest offers various functions modules for Devkit8500D including VGA (VGA8000), WiFi (WF8000-U), Analog Camera (CAM8000-A), GPS (GPS8000-S), GPRS (GPRS8000-S), 3G (CDMA8000-U, WCDMA8000-U) and Digital Camera (CAM8100-U, CAM8000-D) modules which greatly extends the functions of the board and would be flexible for customer selection to meet their own needs.

Module	Description	Interface to Board	Linux	Android	WinCE
VGA8000	VGA Module	LCD	Support*	Not yet	Support*
CAM8000-A	Analog Camera Module	Camera	Support*	Not yet	Support*
WF8000-U	WiFi Module	USB Host	Support*	Support*	Support#
GPS8000-S	GPS Module	UART	Support*	Support*	Support*
GPRS8000-S	GPRS Module	UART	Support*	Not yet	Support*
CDMA8000-U	3G Module (CDMA2000 standard)	USB Host	Support*	Support*	Support#
WCDMA8000-U	3G Module (WCDMA standard)	USB Host	Support*	Support*	Support#
CAM8100-U	Digital Camera Module	USB Host	Support*	Support*	Support#
CAM8000-D	Digital Camera Module	Camera	Support#	Support#	Support*
COM8010-S	UART Extension Module	Expansion	Support*	Support*	Support#

= Provided with Source Code

 # = Not Provided with Source Code



Embest DevKit8500D with Function Modules

Hardware Features

The Texas Instruments' DM3730 DaVinci™ digital media processor is powered by up to 1-GHz (also supports 300, 600, and 800-MHz operation) ARM Cortex-A8 and 800-MHz (also supports 250, 520 and 660-MHz operation) C64x+ DSP core, and has integrated 3D graphics processor, imaging and video accelerator (IVA), USB 2.0, MMC/SD memory card, UART and many more. DaVinci DM3730 video processor is pin-to-pin compatible with Sitara AM37x devices and software compatible with the OMAP35x processors. The C64x+ DSP and hardware video

accelerator enable audio and HD 720p video decoding and encoding independent of the ARM processor. The programmable DSP engine allows multiple signal processing tasks such as image processing and analysis, digital filtering, and math functions. DaVinci DM3730 video processor is suitable for 720p HD (High Definition) video applications which require large amount of data processing.

The DevKit8500D Evaluation board is based on DM3730 processor and takes full features of the processor. This board is characterized as follows:

Processor

- TI DM3730 DaVinci Digital Media Processor (pin-to-pin compatible with TI AM3715)

- Up to 1-GHz ARM® Cortex™-A8 Core, also supports 300, 600, and 800-MHz operation
- Up to 800-MHz TMS320C64x+™ DSP Core, also supports 260, 520 and 660-MHz operation (DM3730 only)
- NEON™ SIMD Coprocessor
- POWERVR SGX™ Graphics Accelerator
- ARM: 32KB I-Cache; 32KB D-Cache; 256KB L2 Cache
- Onchip 32KB ROM and 64KB Shared SDRAM

Memory

- 512MByte DDR SDRAM, 32bit, 200MHz
- 512MByte NAND Flash, 16bit
- 2GB iNAND, 4bit (Default: not soldered, optional, reserved for soldering)

Audio/Video

- S-VIDEO display interface
- DVI high-resolution image output port (HDMI interface, support 720p, 30fps signal)
- Audio input interface
- Two-channel audio output interface
- TFT LCD interface, 24-bit true color, resolution supporting up to 2048*2048
- 4-line Touch Screen interface
- Camera interface (support CCD or CMOS camera)

Data Transfer Interface

- 1 x 5 line Debug serial port, RS232 (DB9 connector)
- 1 x USB2.0 OTG, High-speed, 480Mbps
- 4 x USB2.0 Host, High-speed, 480Mbps
- TF card slot
- Ethernet: 10/100Mbps, RJ45 connector

Input Interface and Other Facilities

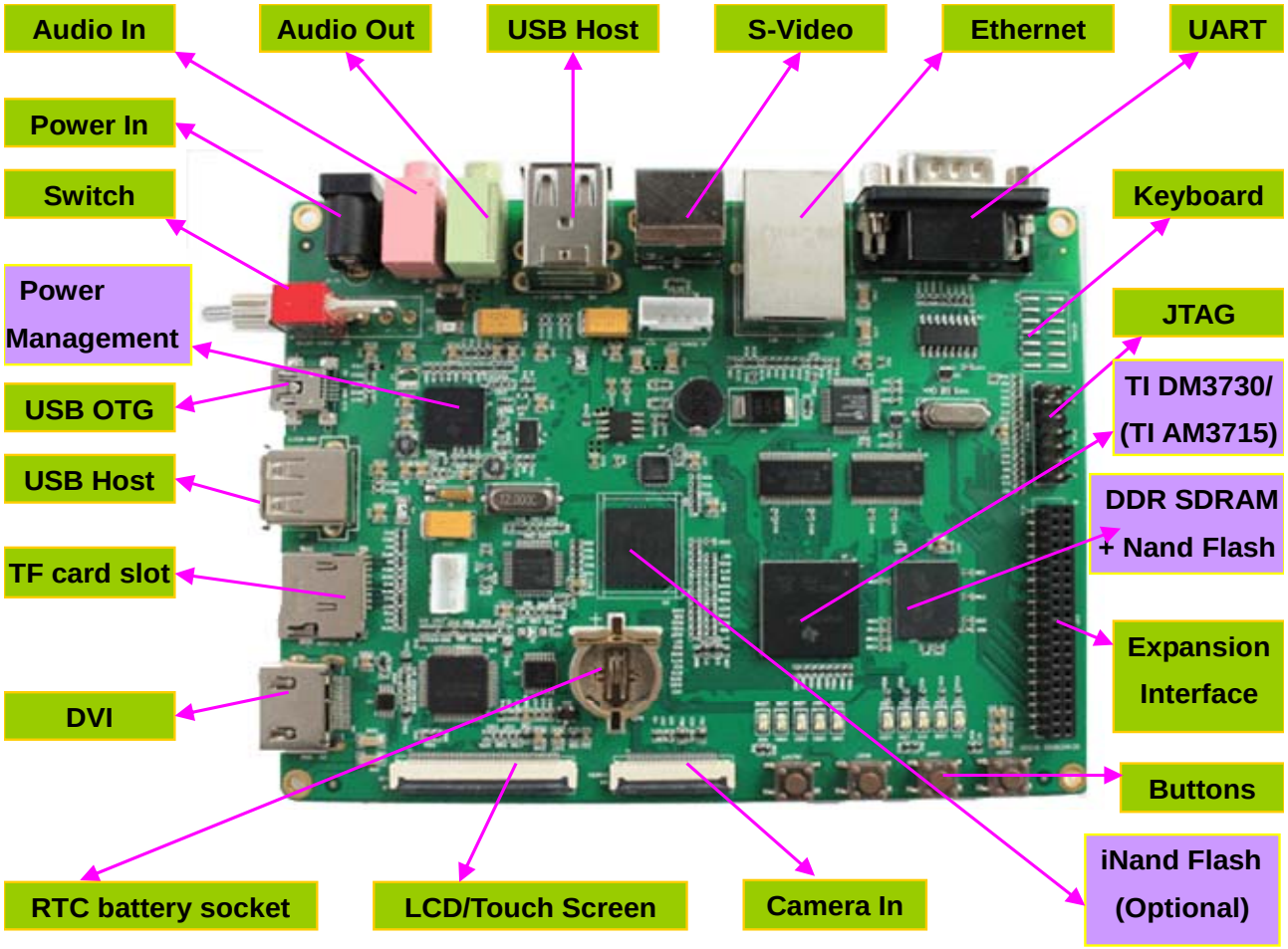
- 6*6 keyboard interface
- One 14-pin JTAG interface
- One Wakeup button
- One RESET button
- Two USER buttons
- One expansion connector (2.0mm 40-pin SMT Female Pin Header)
  - 2 x 5 line serial ports, TTL voltage
  - 1 channel McSPI Interface (Multichannel Serial Port Interface)
  - 1 channel McBSP interface (Multi-Channel Buffered Serial Port)

- 1 channel I2C interface
- 1 channel HDQ interface (HDQ/1-Wire)

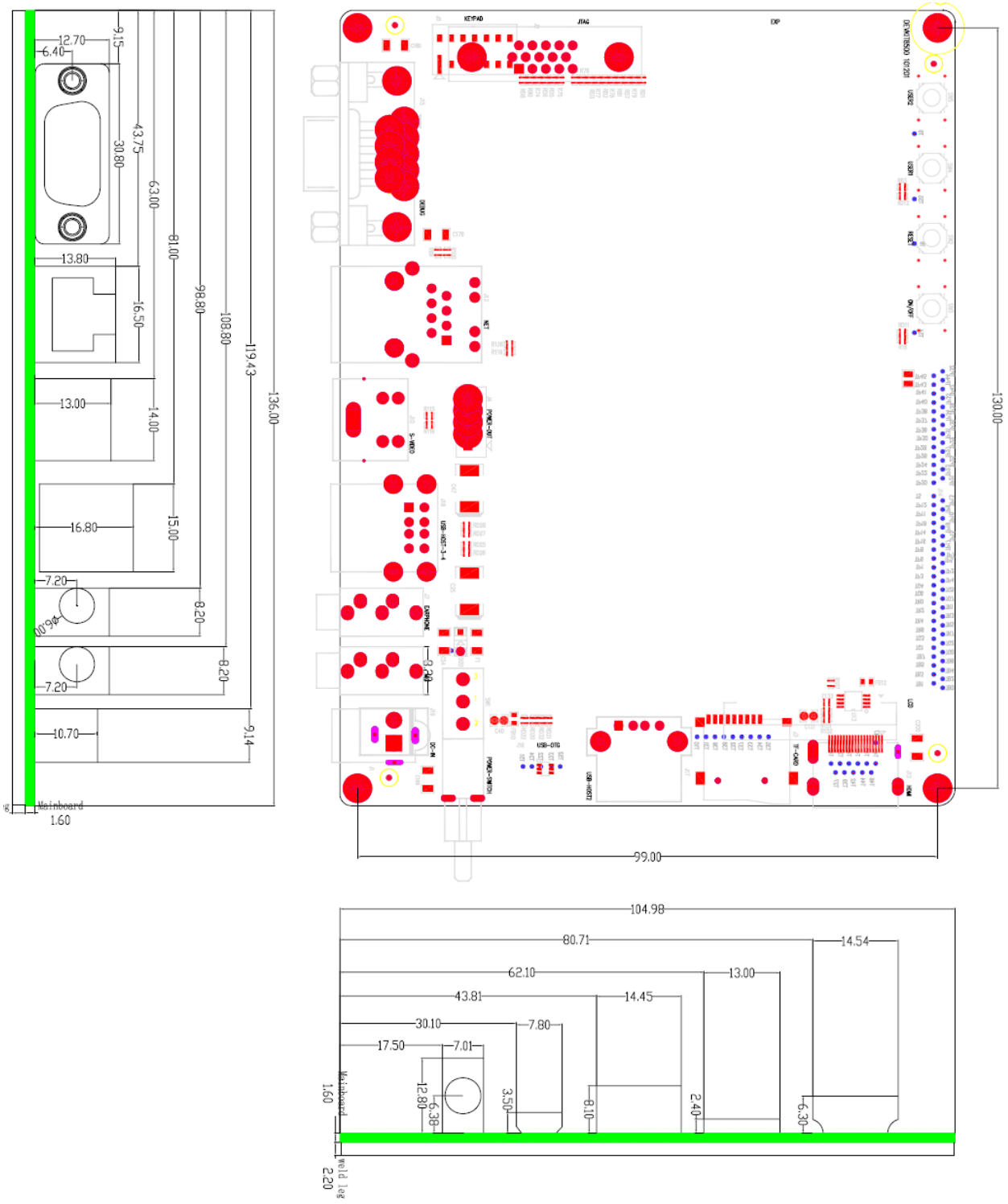
Mechanical Parameters

- Dimensions: 136.2 mm x 105.3 mm
- Input Voltage: +5V
- Working Temp.: 0 ℃ ~ 70 ℃
- Humidity Range: 20% ~ 90%

Interface Introduction



Dimensions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63.00
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119.43
136.00
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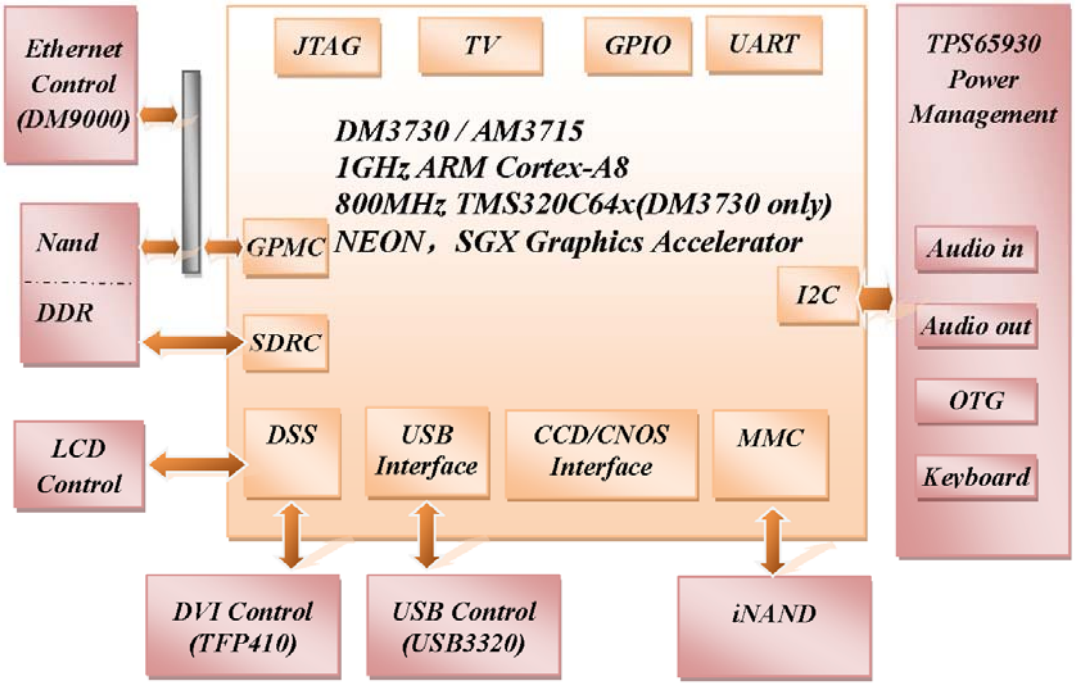
16.50
13.00
14.00
16.80
15.00
7.20
8.20
7.20
8.20
10.70
9.14
Mainboard
1.60
KEYPAD
JTAG
DIP
130.00
99.00
104.98
80.71
62.10
43.81
30.10
17.50
14.54
13.00
14.45
7.80
7.01
12.80
6.38
3.50
8.10
2.40
6.30
Mainboard
1.60
weld leg
2.20

Function Block Diagram



Software

The DevKit8500D Evaluation board provides Window CE 6.0.net BSP, Linux 2.6.32 BSP and Android 2.2 BSP, with steady-going drivers, many of which are all in source code. Please refer to below table.

OS	Item		Remark
Linux	BIOS	x-loader	NAND / ONENAND
			MMC/SD
			FAT
		u-boot	NAND / ONENAND
			MMC/SD
			FAT
			NET
	Kernel	Linux-2.6.32	Supports ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/UBIFS file systems
	Device Driver	Debug serial port, RTC, Ethernet, Nand Flash, Touch screen, TF card, USB Device, USB ehci, Audio input/output, keypad, LED	
		Display driver (TFT LCD, DVI-D, S-Video)	
	GUI	Android 2.2	froyo
Android	Kernel	Android 2.2	froyo
	Device Driver	Debug serial port, RTC, Ethernet, Nand Flash, LCD, Touch screen, TF card, USB Device, USB ehci, Audio input/output, keypad, LED, 2D/3D (do not provide source code)	
WinCE	BIOS	x-loader	NAND
			ONENAND
			TF
		e-boot	NAND
			ONENAND
			TF
	OAL	OAL module	REBOOT
			Watchdog
			RTC
		KITL module	RNDIS KITL
	Device Driver	Debug serial port, RTC, Ethernet, NAND Flash, Touch screen, TF card, USB Device, USB ehci, Audio input/output, keypad, LED, 2D/3D (do not provide source code)	
		Display driver (TFT LCD, DVI-D, S-Video)	
		Power Management (backlight, battery, Sleep/Wakeup, PWM, ADC)	
	APP	application module	Flash Player plug-in and Flash player
			MP3/MPEG4/H264 DSP hardware decoder

Order Information

Order No.	T6010140	
Item	DevKit8500D/A Evaluation Board	
Deliveries	• One DevKit8500D/A Evaluation board • One Product DVD (including user manual, schematic in PDF format, datasheet, Linux 2.6.32 BSP, Android 2.2 BSP and WinCE 6.0 BSP)	
Order No.	T6030030D	
Item	DevKit8500D/A Evaluation Kit Standard Configuration	
Deliveries	• One DevKit8500D/A Evaluation board • One 2GB TF card • One Serial cable (DB9-DB9) • One 5V@2A Power adapter • One USB cable (Type A Male to Type Mini-B Male) • One USB cable (Type A Female to Type Mini-A Male) • One Cross Ethernet cable • One HDMI to DVI-D cable • One S-Video cable • One Product DVD (including user manual, schematic in PDF format, datasheet, Linux 2.6.32 BSP, Android 2.2 BSP and WinCE 6.0 BSP)	
Order No.	T6010142 (with 4.3” LCD)	T6010144 (with 7” LCD)
Item	DevKit8500D/A Evaluation Kit Complete Configuration	
Deliveries	• One Embest Devkit8500D/A Evaluation Kit Standard Configuration • One 4.3" LCD or 7" LCD (With touch screen) Remark: 4.3”LCD (resolution: 480*272), 7"LCD (resolution: 800*480)	
Options	• VGA8000 VGA Module • CAM8000-A Analog Camera Module • CAM8100-U USB Digital Camera Module • CAM8000-D Digital Camera Module • WF8000-U WiFi Module • GPS8000-S GPS Module • GPRS8000-S GPRS Module • CDMA8000-U USB 3G Module (CDMA2000 Standard) • WCDMA8000-U USB 3G Module (WCDMA Standard) • COM8010-S UART Extension Module	
Price	Please contact us.	

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